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Severe Acute Respiratory Syndrome (SARS) Surveillance and Response Planning Guide for California Healthcare Facilities

Introduction

Severe acute respiratory syndrome (SARS) is a recently recognized, contagious, febrile lower respiratory infection caused by a novel coronavirus called SARS-CoV. The worldwide outbreak of SARS that occurred between November 2002 and July 2003 most likely originated in China and spread rapidly to Canada, Hong Kong, Taiwan, Singapore and Vietnam. According to the World Health Organization (WHO) there were a cumulative total of 8422 cases with 916 deaths (case fatality rate 11.0%). Of the reported cases, 1725 (20%) occurred in health care workers (HCW). In the United States, 373 possible SARS-CoV cases were reported from 41 states and Puerto Rico. Using the Centers for Disease Control and Prevention (CDC) SARS surveillance case definitions, 67 (18%) of these cases were classified as “probable” SARS cases and 306 (82%) were classified as “suspect” cases; no deaths were reported in the United States. Laboratory evidence of SARS-CoV infection was detected in only 8 cases (all “probable”). Seven were associated with international travel to countries with known SARS transmission and one case was likely related to household transmission.

It is possible that SARS may re-emerge and it is, therefore, imperative to immediately engage in planning activities. The California Department of Health Services (CDHS) Division of Communicable Disease Control (DCDC) in consultation with the Licensing and Certification Program recommends that healthcare facilities including hospitals, outpatient clinics and physicians in private practice use this guide to develop a SARS surveillance and response plan. This guide is based, in part, on the CDC Public Health Guidance for Community-level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS), (<http://www.cdc.gov/ncidod/sars/sarsprepplan.htm>), in particular Supplement C: Preparedness and Response in Healthcare Facilities and Supplement B: SARS Surveillance. Revised guidelines for SARS infection control have not yet been issued by CDC; the management of patients with risk factors for SARS as described below should follow the recommendations previously issued by CDHS on June 12, 2003 (www.dhs.ca.gov/ps/dcdc/disb/sars.htm). Recommendations for screening, surveillance, and reporting begin on page 7 of this document.

Global Outbreak – Lessons Learned

Transmission of SARS-CoV in healthcare facilities was a major factor in the spread of infection during the 2003 global epidemic. In areas with extensive outbreaks, the virus spreads most readily among HCW caring for SARS patients and to other patients and visitors. Factors that likely contributed to the disproportionate rate of transmission in healthcare settings include: 1) a higher virus titer in respiratory secretions during the second week of illness when patients are likely to be hospitalized, 2) use of ventilators, nebulizers, endotracheal intubation, and other droplet- and aerosol-generating devices and procedures, and 3) frequent exposure to patients, their secretions, and potentially contaminated environments.

The large number of HCW who developed SARS demonstrates the importance of early detection and the rapid implementation of infection control procedures in limiting the spread of disease. In every region in which major outbreaks were reported, a substantial proportion of cases resulted from delays in clinical recognition and isolation of patients. SARS-CoV was also transmitted by infected visitors and by hospitalized patients with other medical conditions that masked the symptoms of SARS. Case recognition and the implementation of appropriate precautions greatly reduced the risk of SARS-CoV transmission. However, even with appropriate precautions, there were isolated reports of transmission to HCW in the settings of aerosol-generating procedures and lapses in infection control technique.

The lessons learned from the global experience with SARS in healthcare settings that have been considered in developing this surveillance and response planning guide include:

- Strict adherence to isolation guidelines including eye protection prevents SARS-CoV transmission.
- Undetected cases of SARS in staff, patients and visitors contribute to the rapid transmission of SARS in healthcare facilities.
- Optimal control efforts require continuous analysis of the dynamics of SARS-CoV transmission in the facility and the community.
- A response to SARS can push the capacity of the healthcare facility to the limits.
- The social and psychological impact of SARS can be substantial both during and after the outbreak.
- The most effective systems for controlling a nosocomial outbreak are those that are developed and tested before the outbreak occurs.
- Communication needs can overwhelm and paralyze response capacity and good information management strategies are essential to an efficient and effective response.

SARS Surveillance and Response Planning

California healthcare facilities need to be prepared for the rapid pace and dynamic features of a SARS outbreak. All hospitals should be equipped and ready to care for a limited number of SARS patients as part of routine operations and to care for a larger number of patients in the context of escalating transmission. However, pediatric facilities may modify their planning and preparedness to take into account the lower incidence, milder illness, and lower risk of transmission of SARS in children.

This SARS surveillance and response planning guide provides suggestions for how hospitals should prepare for and respond to SARS. It outlines basic activities that should be taken before SARS is recognized anywhere in the world (transmission level 0) as well as the enhanced activities that will be needed to address increasing levels of SARS activity (transmission levels 1 and 2). As surveillance and response activities for SARS are, in many ways, analogous to those required for other types of emergency and mass-casualty events, planning for SARS may only require integration of SARS-specific activities into existing plans and protocols.

The Hospital Emergency Incident Command System (HEICS)

The Hospital Emergency Incident Command System (HEICS) evolved from the Incident Command System developed by the fire service in the early 1970's. This system defines the role that staff would be expected to play if a disaster were to occur within the healthcare facility or in the community. If SARS is confirmed in the community, each healthcare facility will have to assess if and when the HEICS will be put into action and the key roles that staff will play in the evolving outbreak.

SARS Surveillance and Response Planning Team

Hospital administrators should designate a multi-disciplinary team as a subcommittee of the infection control or bioterrorism response planning committee. The team should have a designated leader, preferably the infection control practitioner (ICP), hospital epidemiologist, or the committee chairperson. The team should be responsible for developing, implementing, and evaluating surveillance and response activities. The following departments and services that could be affected once a SARS case is identified in the hospital or the community should be represented on the leadership team:

- Facility epidemiologist/infectious disease specialist (team chairperson)
- Infection control practitioner (ICP) (SARS coordinator, alternate chairperson)
- Representation from hospital administration
- Nursing administration (emergency department, critical care units, other nursing units such as pediatrics)
- Clinical and support services (which could include laboratory, pathology, radiology, respiratory therapy, pharmacy, environmental services, facilities)

management, security, materials management, public relations, social services, risk management, training and development)

- Occupational/Employee Health Services
- Admission and patient registration
- Human Resources
- Representation from the medical staff
- Representation from outpatient clinic services and physician offices
- Other representatives, such as social services, unions, and first responders.

SARS surveillance and response efforts will require a coordinated response with the community; therefore, a representative from the local health department should be invited to be a consulting member of the team.

Surveillance and Response Planning Team Objectives

When developing a SARS surveillance and response plan, the following activities should be considered:

- Develop, implement and evaluate a respiratory hygiene program.
- Develop, implement and evaluate a SARS surveillance program.
- Develop, implement and evaluate procedures for patient clinical management.
- Develop, implement and evaluate safe work practices including isolation, transport traffic flow and respiratory protection procedures.
- Provide education programs to HCW, physicians, students and residents, contract personnel and volunteers.
- Develop, implement and evaluate engineering (air handling) and environmental control practices.
 - Determine capacity for airborne isolation in the Emergency Department (ED), Intensive Care Units (ICU) and non-ICU settings.
 - Determine effectiveness of existing ventilation systems (airflow patterns and negative pressure) in airborne infection isolation rooms (AIIR).
 - Inventory mobile HEPA filtration units.
 - Recommend, if indicated, alterations to the design of existing ventilation systems to achieve proper airflow direction and exchanges per hour.
 - Determine air handling capacity for a dedicated SARS nursing unit.
- Review employee exposure reporting, evaluation and work restriction procedures.
 - Establish an exposure reporting process (e.g., self-reporting or logs of healthcare workers and visitors entering a SARS patient room).
 - Develop a mechanism for reporting and follow-up of exposed HCW.
 - Perform symptom surveillance for fever or respiratory symptoms in HCW with unprotected exposures.
 - Consider work restriction of HCW with unprotected high-risk exposures such as respiratory procedures.
 - Evaluate symptomatic HCW.

- Develop staffing, diversion and surge capacity procedures.
 - Determine staffing needs for varying numbers of SARS patients.
 - Determine when ED and hospital should go on diversion.
 - Consider designating teams to provide initial care in an outbreak:
 - General, multi-disciplinary care team
 - Emergency care/ICU team
 - Respiratory therapy team for resuscitation and aerosol-producing procedures
 - Consider how teams could be expanded.
- Develop security and hospital access controls.
- Determine the current availability of and anticipated levels of supplies and equipment needed in an outbreak.
- Review internal and external communication procedures.
 - Determine ways to update people on SARS activity in the hospital, what control measures are being taken and what they may be asked to do (e.g., entry screening etc).
 - Establish a mechanism to share information with the local health department:
 - SARS activity in the community
 - SARS activity in the facility
 - Exposures, for contact tracing
 - Information on SARS patients about to be discharged for community isolation
- Determine the needs of the community during a SARS outbreak.

Each of these activities is discussed in detail in the CDC Public Health Guidance for Community-level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS), Supplement C: Preparedness and Response in Healthcare Facilities (<http://www.cdc.gov/ncidod/sars/sarsprepplan.htm>).

Patient Respiratory Hygiene Program

To reduce the risk of transmission of not only SARS but other seasonal infections such as influenza, a patient respiratory hygiene program should be developed and implemented in all healthcare facilities. Patients entering any healthcare facility should be educated about the importance of the respiratory hygiene program. This can be accomplished by posting signs in appropriate languages at all entrances used by patients who enter hospitals, emergency departments, physicians' offices or outpatient clinics. Many healthcare facilities have video capabilities in areas such ED waiting rooms that can also be used to educate patients. In addition to signs, a respiratory hygiene program should:

- Provide surgical masks to all patients with symptoms of a respiratory illness (fever or cough) with instructions on proper use and disposal.
- Place a box of surgical masks as close to the entry as possible.
- Instruct patients to cover their nose and mouth with a tissue when coughing or sneezing.
- Provide a small paper or plastic bag for mask and tissue disposal.
- Provide a readily accessible waterless hand hygiene product and instruct patients to decontaminate their hands after contact with respiratory secretions and before contact with a healthcare worker, family member and registration personnel.
- Separate patients with respiratory illness from other patients by either placing them into a cubicle, examination room, or physical separation from others by at least 3 feet.

Isolation Precautions

All patients admitted to the hospital with fever and respiratory symptoms, including pneumonia, should at a minimum be placed upon droplet precautions until they can be evaluated clinically and for SARS exposure risk factors as described below. If there is a high suspicion for SARS, isolation precautions for SARS, including placement in an airborne infection isolation room (AIIR), should be considered. SARS infection control recommendations were previously issued by CDHS on June 12, 2003, and can be accessed at www.dhs.ca.gov/ps/dcdc/disb/sars.htm. New SARS infection control recommendations are currently under development by CDC.

Role of the Infection Control Practitioner

Because the role of the infection control practitioner (ICP) is highly visible in the hospital and surveillance for communicable diseases is a primary function, the ICP is in a unique position to rapidly identify patients with unusual infectious syndromes. Surveillance in intensive care units (ICU), the emergency departments (ED), patient care units and outpatient clinics should be routinely performed. In addition, a review of clinical laboratory, pathology and radiology final reports is vital to the early recognition of patients admitted with an exposure history and pneumonia with an unidentified pathogen. The following case-finding suggestions are offered:

- Review admissions, discharges and deaths.
- Review medical records including laboratory reports of patients admitted with a diagnosis of pneumonia.
- Review requests for and document the results of influenza A and B, respiratory syncytial virus, *Mycoplasma pneumoniae*, *Chlamydia* species, *Legionella* species, SARS-CoV, parainfluenza virus and unusual pathogens such as hantavirus, varicella, adenovirus.
- Review requests for and results of virology cultures.

- Review results of chest x-ray reports of patients hospitalized with pneumonia.
- Review pathology and autopsy reports.
- Identify patients with pneumonia unresponsive to antibiotic therapy after 3 days of treatment.
- Review reports of HCW absenteeism.
- Communicate frequently with physicians, nurses, the local health department and infection control practitioners in other local hospitals.

Surveillance at Transmission Level 0 – No SARS Activity Anywhere in the World

If SARS were to return, it will likely be in a setting outside the United States. At transmission level 0, when there is no SARS activity anywhere in the world, it is important to set an index of suspicion that can detect early cases but not impose an unreasonable work load on health care providers and local health departments. Surveillance at transmission level 0 is designed to identify persons with pneumonia who have known exposure risk factors for SARS. In order to identify such persons, every patient hospitalized with radiographic evidence of pneumonia should be screened with the following questions:

In the 10 days prior to the onset of respiratory symptoms:

- Have you returned from travel to China, Hong Kong or Taiwan or had close contact with any person returning from those places who is ill with a respiratory infection?
- Are you employed as a healthcare worker?
- Have you had close contact with a person(s) recently diagnosed with pneumonia for which an alternative pathogen has not been identified?

If the answer is yes to any question, the infection control practitioner and the local health department should be notified and the patient placed on isolation precautions and clinically evaluated as follows. Note that evaluation and management for possible SARS should be considered only for adults, unless there are special circumstances that make the clinician and local health department consider a child to be of potentially higher risk.

Isolation Precautions

Droplet precautions should be continued while patients are evaluated clinically. If there is a high suspicion for SARS, isolation precautions for SARS, including placement in an airborne infection isolation room (AIIR), should also be considered. CDHS SARS infection control recommendations can be accessed at www.dhs.ca.gov/ps/dcdc/disb/sars.htm.

Clinical Evaluation

To date, no specific clinical or laboratory findings can reliably and rapidly distinguish SARS from other respiratory pathogens. Therefore, the early recognition of SARS still relies on a combination of clinical assessment and exposure history. Although exposure history is a main factor to consider in the diagnosis, many SARS patients share some suggestive clinical characteristics.

The earliest symptoms of SARS usually include fever, chills, rigors, myalgia and headache. In some patients myalgia and headache may precede the onset of fever by 12 – 24 hours. Diarrhea may also be an early manifestation. Respiratory symptoms may not be manifest until 2 -7 days after the onset of illness and often include shortness of breath and/or a dry cough. Although not diagnostic, the following laboratory abnormalities have been identified in some patients with confirmed SARS-CoV infection:

- Lymphopenia with normal or low white blood cell count
- Elevated transaminases
- Elevated creatine phosphokinase
- Elevated lactate dehydrogenase
- Elevated C-reactive protein
- Prolonged activated partial thromboplastin time.

As soon as possible after admission, patients should be clinically evaluated with at least the following diagnostic tests:

- Chest radiograph (consider a chest CT scan if radiograph is negative)
- Complete blood count with differential
- Chemistry panel
- Pulse oximetry
- Sputum Gram stain and culture
- Blood culture
- Testing for viral respiratory pathogens including influenza A and B and respiratory syncytial virus (RSV)
- Consider urine for *Legionella* and pneumococcal antigen testing
- Serum, sputum and feces, if collected, should be saved for additional testing as directed by the local health department.

If an alternative diagnosis is confirmed, the physician should treat the patient as clinically indicated. If, after 72 hours, no alternative pathogen is identified, the local health department should be consulted for further laboratory testing recommendations (other respiratory pathogens to consider include: *Mycoplasma pneumoniae*, *Chlamydia* species, parainfluenza virus, *Legionella* species and other unusual pathogens such as hantavirus, adenovirus and varicella). SARS-CoV testing should not be ordered unless specifically suggested by the local health department.

Surveillance at Transmission Level 1 – SARS Activity Reported Somewhere in the World

By definition, at transmission level 1 SARS activity has been reported somewhere in the world, possibly including the U.S., but not in the community where the hospital is located. Since the likelihood of SARS is substantially increased relative to transmission level 0, surveillance should be expanded to include persons with fever or respiratory symptoms and to include outpatient settings. Every patient being clinically evaluated for fever or respiratory symptoms should be screened with the following questions:

In the 10 days prior to the onset of respiratory symptoms:

- Have you returned from travel to a location (named by the interviewer) in which recent SARS transmission is suspected or confirmed?
- Have you had close contact with a person(s) suspected or confirmed as having SARS, or a person with respiratory illness who has traveled to a location just mentioned?

Management of Patients with Positive Exposure History

If the answer is yes to any question, the local health department (and infection control practitioner if applicable) should be notified, the patient placed in SARS isolation precautions (in an AIIR if hospitalized), and clinical evaluation as described for transmission level 0 initiated. That evaluation can also be used in children with the following caveats:

- The timing and rate of development of radiographically confirmed pneumonia are unknown.
- The positive predictive value of rapid virus antigen detection tests (e.g., RSV) “in season” will be higher in a pediatric population.
- Pneumococcal and legionella urinary antigen testing are not recommended for routine diagnostic use in children.

Following preliminary clinical evaluation they should be managed as follows.

Management of Patients with Positive Exposure History and Radiographic Evidence of Pneumonia

If there is radiographic evidence of pneumonia on admission, the local health department should be consulted for SARS-CoV testing recommendations.

If laboratory evidence of SARS-CoV infection is found, the patient should remain in SARS isolation precautions (in an AIIR if hospitalized) until 10 days after the resolution of fever and absent or improving respiratory symptoms.

If an alternative diagnosis is confirmed, the infection control practitioner could discontinue isolation when all of the following criteria are met:

- Absence of strong epidemiological link to suspect or confirmed SARS cases.
- Alternative diagnosis is confirmed using a test with high predictive value.
- Clinical manifestations entirely explained by alternative diagnosis.
- No evidence of clustering of pneumonia cases among close contacts of patient.

The local health department may be consulted in regard to discontinuing isolation.

Management of Patients with Positive Exposure History and No Radiographic Evidence of Pneumonia

If there is no radiographic evidence of pneumonia on admission, patients should be clinically evaluated for an alternative diagnosis as described for Risk Level 0. In the continued absence of pneumonia and the confirmation of an alternative diagnosis, consider discontinuing airborne isolation. If there is no alternative diagnosis identified within 72 hours after hospitalization:

- Continue SARS isolation precautions (in an AIIR if hospitalized)
- Reevaluate clinical symptoms 72 hours after the initial evaluation
- Consider discontinuing SARS isolation if symptoms improve or resolve
- Consult with the local health department regarding SARS-CoV testing if fever or respiratory symptoms persist
- Repeat the chest x-ray or perform a CT scan of the chest (chest CT scans should be considered in all patients with a strong epidemiologic link to a known SARS case but a negative CXR)
- Discontinue isolation after consultation with the local health department if there is no evidence of pneumonia after an additional 72 hours (a total of 144 hours).

Management of Patients with Negative Exposure History

If there is radiographic evidence of pneumonia on admission to a hospital, these patients should be managed as for transmission level 0: placed on droplet precautions, screened for transmission level 0 SARS exposure risks and, if positive, clinically evaluated as described. If no alternative diagnosis is established after 72 hours, the local health department should be consulted regarding SARS-CoV testing.

If there is no radiographic evidence of pneumonia, these patients should be treated as clinically indicated.

Healthcare Worker Surveillance

Infection control and occupational health practitioners should be alert for the occurrence of pneumonia without an alternative diagnosis among two or more

healthcare workers who work in the same facility. Healthcare workers should be required to report any exposure within 10 days prior to the onset of symptoms to a case of pneumonia without an alternative diagnosis occurring in (1) any patient belonging to a high risk sentinel group while working in another facility and (2) to a patient, another healthcare worker, household member or other close contact returning from any location in which recent SARS transmission is suspected or confirmed. Healthcare workers who develop pneumonia for which an alternative pathogen has not been identified should be immediately isolated and reported to the local health department.

Surveillance at Transmission Level 2 – SARS Activity Reported in the Community

By definition, at transmission level 2 SARS activity is occurring in the community where the hospital is located. The patient should be clinically managed and placed on isolation precautions as described above. At this level, the risk of SARS may be quite high, so that the SARS surveillance and response planning team should consider intensifying patient, visitor and HCW screening and infection control measures as follows:

- Limit visitors of suspected and confirmed SARS patients.
- Screen visitors who enter the facility for fever and respiratory symptoms.
- Provide isolation training to visitors.
- Require visitors and HCW to perform hand hygiene prior to entering the facility.
- Monitor HCW for fever or respiratory symptoms at the beginning of each shift.
- Require HCW who develop fever or respiratory symptoms during the work shift to be clinically evaluated.
- Restrict from work HCW who had unprotected, high risk exposure.
- Monitor HCW who had protected exposures for fever or respiratory symptoms.
- Maintain a log of HCW who provide direct care to suspect or confirmed SARS patients.
- Reinforce the respiratory hygiene program.
- Maintain a log of visitors, vendors, consultants, etc., to assist in contact tracing.

Discharge Planning

Patients with suspected or confirmed SARS should be reported to the local health department prior to discharge from the hospital or ED. Home care instructions should be given to the patient and their care givers. The local health department should also be notified when patients with tuberculosis are discharged from an AIIR.

Education and Training

All hospital staff including physicians, technicians, administrative personnel, students and volunteers should be educated about SARS and the infection control precautions necessary to prevent transmission. As part of the hospital's emergency response planning, drills and exercises should be conducted periodically to assess the level of staff knowledge and preparedness. The drills should be evaluated to determine if changes in surveillance and prevention and control procedures are necessary. The training should include at a minimum:

- Surveillance systems to rapidly identify patients.
- Respiratory hygiene program.
- Epidemiology of SARS.
- Clinical symptoms and limitations of current diagnostic procedures.
- Soliciting admission information including an exposure history.
- Transmission of SARS.
- Isolation protocols.
- Personal protective equipment including the use of respirators.
- Hand hygiene.
- Fit testing of respirators (several types).
- Triage of patients in the ED and direct admits.
- Setting up isolation waiting areas.
- Reporting and interpreting laboratory and radiology reports.
- Work restrictions.
- Symptom surveillance for exposed hospital staff.
- Traffic flow and elevator use for potentially infected patients.
- Location of AIIR.
- Use of fixed and mobile HEPA filtration units.
- Checking AIIR rooms for negative pressure before admission and daily.
- Handling and transporting soiled linen and contaminated waste.
- Use of respiratory protection devices during aerosol-generating procedures, intubation, cardiac arrest, and ventilator-assisted procedures.
- Environmental cleaning and disinfection (daily and terminal).
- Patient discharge instructions and home isolation restrictions.
- Role of hospital security.
- Role of the local health department.

Local and State Health Department Activities

As with bioterrorism planning, the local health department will play a critical role in surveillance and response activities should an outbreak of SARS occur. It is highly recommended that infection control practitioners send a short summary outlining the hospital's SARS surveillance and response plan to the local health department. Administrators, epidemiologists, as well as safety and disaster officers should

participate in city and county surveillance and response planning activities. Each community should establish a process for strategic leadership, direction, coordination and assessment of activities to ensure local readiness and interagency collaboration in response to an outbreak of SARS and other biological threats and emergencies. During an outbreak of SARS, local health department activities may include the need to:

- Develop and disseminate surveillance guidelines for recognizing, evaluating and reporting cases or clusters of hospitalized pneumonia.
- Develop a surveillance system to receive and analyze reports of patients hospitalized with pneumonia.
- Solicit information from hospitals related to patients hospitalized with pneumonia and an exposure history.
- Communicate with physicians on the advantages and disadvantages of performing SARS- CoV testing in the absence of SARS activity.
- Facilitate testing of non-SARS-CoV pathogens such as influenza and RSV.
- Develop and monitor home isolation orders.
- Consult with ICP on discharge criteria and discontinuing isolation procedures.
- Consult with CDHS regarding cases or clusters of pneumonia with an exposure history.
- Respond to media requests for information.

Reporting to Licensing and Certification

The California Code of Regulations, Title 17, Section 2500 (c) requires “The administrator of each health facility, clinic or other setting where more than one health care provider may know of a case, a suspected case or an outbreak of disease within the facility shall establish and be responsible for administrative procedures to assure that reports are made to the local health officer.” In addition, Title 22, Section 70737(a) requires that health facilities report “any occurrence such as an epidemic outbreak, poisoning, fire, major accident, disaster, other catastrophic or unusual occurrence which threatens the welfare, safety or health of patients, personnel or visitors ... as soon as reasonably practical either by telephone or by telegraph, to the local health officer and to the Department.”

Hospitals should report cases of pneumonia occurring in any one of the sentinel groups to the local health department and to the Licensing and Certification district office with jurisdiction over the facility. Once SARS activity is confirmed at the community level, hospitals should submit to Licensing and Certification a written plan of correction as directed by the district office manager.

Outpatient Clinics and Office Practice Settings

Many patients with mild to moderate respiratory symptoms, with or without fever, will likely seek medical evaluation in an outpatient setting. Outpatient clinic services and physician office practices should seriously consider implementing a respiratory hygiene program to protect staff and patients from respiratory illnesses such as influenza as described above on page 5.

At Transmission Risk Level 0, when no SARS activity is identified anywhere in the world, in addition to the respiratory hygiene program any adult (≥ 18 years) patient with radiographic evidence of pneumonia should be placed on droplet precautions and screened with the following questions:

In the 10 days prior to the onset of respiratory symptoms:

- Have you returned from travel to China, Hong Kong or Taiwan or had close contact with any person returning from those places ill with a respiratory infection?
- Are you employed as a healthcare worker?
- Have you had close contact with a person(s) recently diagnosed with pneumonia for which an alternative pathogen has not been identified?

If the answer is yes to any one of the above 3 questions, the local health department should be notified.

Once SARS activity has been identified, surveillance and screening recommendations in the outpatient setting will change depending on the location and extent of SARS transmission. If revised surveillance and screening recommendations have not yet been issued, consult with the local health department.

To stay informed about the latest respiratory illness circulating in the hospital and in the community, clinic and office practice physicians should communicate frequently with the hospital ICP/ epidemiologist and/or the local health department. The following infection surveillance and control measures are suggested for implementation in outpatient settings.

- Review current information, case definition and infection control surveillance and response recommendations.
- Review SARS related information developed by the local health department, county medical associations and local hospitals.
- Attend lectures related to diagnosis, transmission and management of SARS.
- Develop clinic or office-specific infection control procedures and educate staff.
- Schedule patients with fever and respiratory symptoms, if possible, when no other patients are in the office waiting or examination rooms.
- Place such patients in an empty examination room on arrival and close the door.

- Instruct staff to wear personal protective equipment. At a minimum staff should wear a surgical mask and gloves when in the same room as the patient. However, once SARS activity has been confirmed in the community, it is highly recommended that staff wear N-95 respirators after fit-testing.
- Clinically evaluate patients as described above.
- Notify radiology and laboratory services of possible SARS diagnosis before the patient leaves the office. If the patient is to be admitted to the hospital, the ICP and the patient registration office should also be notified.
- Educate patients and care givers about the importance of wearing the surgical mask while in transit to diagnostic services or the hospital.
- Provide discharged patients with home isolation instructions. Inform patients to seek immediate medical evaluation should symptoms worsen.
- Communicate possible SARS diagnosis to the hospital ICP and the local health department.